

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : NEC CORP

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(54) CONVEYING MECHANISM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a conveying device, by which a plane type medium can be conveyed while dust and chips on its surface are removed, at a low cost without any increase in a size of the device.

SOLUTION: This device is provided with a roller 2 conveying a plane type medium, and the roller 2 is provided with a spiral groove 9 arranged on the surface, which is brought into contact with the medium when the roller 2 is arranged on the medium to be conveyed. The spiral groove 9, whose spiral direction is inverted in the central part in the roller shaft direction, is formed so that it is tilted downward to the left in the left side from the central part in the roller shaft direction while it is tilted downward to the right side in the right side from the central part, in the front view from the conveying direction.

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CLAIMS

[Claim(s)]

[Claim 1] It is the conveyance device characterized by having a spiral slot on the surface which said roller is arranged on said data medium in a conveyance device in which it has a roller which conveys plane data medium, and contacts said data medium.

[Claim 2] For said spiral slot, said predetermined location to right-hand side is the conveyance device indicated by claim 1 to which said spiral slot is characterized by to form left-hand side from said predetermined location so that the lower left may become ** and the lower right may become ** when how to roll a spiral became reverse bordering on a predetermined location of roller shaft orientations, and it was formed and said roller was seen at the front from conveyance.

[Claim 3] For said spiral slot, said core to right-hand side is the conveyance device indicated by claim 1 to which said spiral slot is characterized by forming left-hand side from said core so that the lower left may become ** and the lower right may become ** when how to roll a spiral became reverse bordering on a core of roller shaft orientations, and it was formed and said roller was seen at the front from conveyance.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the conveyance device equipped with the device in which the dust which adhered especially on the surface of data medium is removed, about the conveyance device equipped with the roller which conveys plane data medium, such as a manuscript and the recording paper.

[0002]

[Description of the Prior Art] Conventionally, in facsimile apparatus, printer equipment, or a copying machine, it has the conveyance device for conveying the conveyance device and the recording paper for conveying a manuscript to a read station to the Records Department or the printing section. Generally, such a conveyance device is conveying forms, such as a manuscript and the recording paper, with the roller, and has the thing equipped with the removal means for removing the dust which adhered to the form so that dust might adhere to neither a read station nor the printing section from a form. The brush removal device in which the form surface is contacted is one of typical things of such a removal means, and there are some which can shave the dust which adhered to the surface with the brush, and a form, and remove powder.

[0003] There is a cleaner roller as other removal means. A cleaner roller removes the dust which contacted the surface of the form conveyed and adhered to the form surface.

[0004] Furthermore, as other removal means, there is an electrostatic stripper which adsorbs dust with static electricity.

[0005]

[Problem(s) to be Solved by the Invention] In the conventional removal means, static electricity occurs by friction with a brush and the form under conveyance, and the brush removal device in which a brush removes the dust adhering to a form has the defect in which surrounding dust adheres to data medium again with static electricity. A brush will become expensive, although using the brush of a conductor is also considered in order to prevent such a defect.

[0006] Moreover, while a conveyance device is enlarged since a transport device must be equipped with them when a cleaner roller and an electrostatic stripper are used, it becomes expensive and is not economical.

[0007] Furthermore, when a brush and a cleaner roller were used, when the removed dust collected, exchange or cleaning needed to be performed for the brush or the cleaner roller, and it was troublesome.

[0008] The purpose of this invention is cheap and is to offer plane dust and transport devices which can be conveyed while it can delete and powder is removed on the surface of data medium, such as a manuscript and the recording paper, without making equipment enlarge.

[0009] Other purposes of this invention are to offer the transport device which does not need cleaning of the components from which dust is removed.

[0010]

[Means for Solving the Problem] A conveyance device of this invention has a roller which conveys plane data medium, and the roller has a spiral slot on the surface which is arranged on data medium conveyed and contacts the data medium.

[0011] a time of how rolling a spiral becoming reverse bordering on a predetermined location of roller shaft orientations, and a spiral slot being formed, and seeing said roller

at the front from conveyance, in order to eliminate dust on data medium at the right end of [left] a roller -- a spiral slot -- from a predetermined location, left-hand side is formed so that the lower left may become ** and, as for the predetermined location to right-hand side, the lower right may become **.

[0012] In order to remove dust most effectively outside the data-medium surface, when how to roll a spiral becomes reverse bordering on a core of roller shaft orientations, and a spiral slot is formed and a roller is seen at the front from conveyance, left-hand side is good to form a spiral slot so that the lower left may become ** and, as for a core to right-hand side, the lower right may become ** from a core of roller shaft orientations.

[0013]

[Embodiment of the Invention] Next, the gestalt of operation of this invention is explained to details with reference to a drawing.

[0014] Drawing 1 is the perspective diagram showing the gestalt of operation of the conveyance device of this invention. In drawing, the roller pair of a driving roller 2 and the follower roller 3 and the pair of the reading device 1 and a platen roller 4 are arranged in the conveyance direction of a manuscript 1. The driving roller 2 and the reading device 5 are arranged at the reading side side of a manuscript 1.

[0015] A manuscript 1 is guided in one pair of conveyance guides 6, and is conveyed by the nip section of a driving roller 2 and the follower roller 3, and a manuscript 1 is conveyed by the reading device 5 through one pair of conveyance guides 7 by rotation of the driving roller 2 and follower roller 3. The reading device 5 reads the information written in the manuscript 1, being pressed by the platen roller 4, and generates a reading signal.

[0016] A driving roller 2 rotates with the driving force from the motor which is not illustrated. The spiral slot 9 is formed in the surface of a driving roller 9. The spiral slot 9 is divided and formed in right and left from the core (A point) of driving roller shaft orientations. That is, how to roll the spiral of the spiral slot 9 is reverse bordering on the central point A. In the central point A to an left hand wind coil and right-hand side, left-hand side serves as [the way of winding] a right hand wind coil from the central point A. moreover, the time of seeing a driving roller 2 at the front from conveyance -- the spiral slot 9 -- from the central point A, left-hand side is formed so that the lower left may become ** and, as for the central point A to right-hand side, the lower right may become **.

[0017] Next, with reference to drawing 2 and drawing 3, removal actuation of the dust by the driving roller 2 is explained. Both drawing 2 (a), (b) and, and drawing 3 (a) and (b) show what expanded the left end portion for the driving roller 2 and the follower roller 3 of drawing 1 seen from the conveyance direction.

[0018] As shown in drawing 2 (a), suppose that dust 11 was shown in the surface on the left of the central point A of a driving roller 2 seen from the conveyance direction of a manuscript 1. Dust 11 is gathered in the spiral slot 9 on the left-hand side of the central point A of drawing 1, as rotation of a driving roller 2 shows to drawing 2 (b). Dust 11 is lifted upwards with rotation of a driving roller 2, entered into the spiral slot 9, as shown in drawing 3 (a). The dust 11 lifted up moves to a left end, falling to the lower left along with a spiral with gravity, and as finally shown in drawing 3 (b), it falls from the interval at the left end of the spiral slot 9 to a drive roller end.

[0019] When dust 11 is shown in the surface on the right of the central point A of a

driving roller 2 seen from the conveyance direction of a manuscript 1, dust 11 is gathered by rotation of a driving roller 2 in the spiral slot 9 on the right-hand side of the central point A. Dust 11 is lifted upwards with rotation of a driving roller 2, entered into the spiral slot 9. The dust 11 lifted up moves falling to the lower right along with a spiral with gravity, and, finally falls from the interval at the right end of the spiral slot 9 to a drive roller end.

[0020] As mentioned above, since the dust which adhered to the manuscript only by establishing a slot in a driving roller 2, and a manuscript can be shaved and powder etc. can be removed, the component part of a conveyance device does not increase and a miniaturization becomes possible.

[0021] It can prevent that the dust on a manuscript adheres to a reading device, reads, and becomes an error by this.

[0022] The gestalt of operation of this invention is not limited to the gestalt of the operation explained above. For example, the driving roller 2 which has the spiral slot 9 may be a roller which conveys the recording paper to the Records Department or the printing section.

[0023] Moreover, although the location of the spiral slot 9 where it winds and the direction becomes reverse was the central point A of a driving roller 2 as shown in drawing 1, it does not necessarily need to be the central point A and may be located on right-hand side [central point] or left-hand side. Also by this, dust can be eliminated at the right end of [left] a driving roller 2.

[0024] There may not be a location where it winds and the direction becomes reverse extremely, and you may be only the spiral of an one direction. In this case, dust can be eliminated only to an one direction. For example, in drawing 1, although time amount will be taken by the time the dust on the right-hand side of a manuscript (left-hand side) is carried to the left-hand side of a driving roller 2 when a spiral winds, the direction looks at a driving roller 2 at the front from conveyance and the lower left is ** (the lower right is **), exclusion does not take time amount so much in the other location.

[0025] However, the gestalt of operation of drawing 1 at the point of removing the dust of all the locations on a manuscript early to the driving roller both ends besides a manuscript is the most effective.

[0026] In addition, this invention is not limited to the conveyance device of forms, such as a manuscript and the recording paper, but is applied also to the conveyance device of other plane data medium.

[0027]

[Effect of the Invention] As explained above, according to this invention, by conveying plane data medium, such as a manuscript, using the conveyance roller which prepared the spiral slot, without enlarging a conveyance device, paper powder and a rubber roller can be deleted and dust, such as powder, can be discharged outside a conveyance way.

[A technical field to which invention belongs] This invention relates to a conveyance device equipped with a device in which dust which adhered especially on the surface of data medium is removed, about a conveyance device equipped with a roller which conveys plane data medium, such as a manuscript and the recording paper.

PRIOR ART

[Description of the Prior Art] Conventionally, in facsimile apparatus, printer equipment, or a copying machine, it has the conveyance device for conveying the conveyance device and the recording paper for conveying a manuscript to a read station to the Records Department or the printing section. Generally, such a conveyance device is conveying forms, such as a manuscript and the recording paper, with the roller, and has the thing equipped with the removal means for removing the dust which adhered to the form so that dust might adhere to neither a read station nor the printing section from a form. The brush removal device in which the form surface is contacted is one of typical things of such a removal means, and there are some which can shave the dust which adhered to the surface with the brush, and a form, and remove powder.

[0003] There is a cleaner roller as other removal means. A cleaner roller removes the dust which contacted the surface of the form conveyed and adhered to the form surface.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In the conventional removal means, static electricity occurs by friction with a brush and the form under conveyance, and the brush removal device in which a brush removes the dust adhering to a form has the defect in which surrounding dust adheres to data medium again with static electricity. A brush will become expensive, although using the brush of a conductor is also considered in order to prevent such a defect.

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MEANS

[Means for Solving the Problem] A conveyance device of this invention has a roller which conveys plane data medium, and the roller has a spiral slot on the surface which is arranged on data medium conveyed and contacts the data medium.

[0011] a time of how rolling a spiral becoming reverse bordering on a predetermined location of roller shaft orientations, and a spiral slot being formed, and seeing said roller at the front from conveyance, in order to eliminate dust on data medium at the right end of [left] a roller -- a spiral slot -- from a predetermined location, left-hand side is formed so that the lower left may become ** and, as for the predetermined location to right-hand side, the lower right may become **.

[0012] In order to remove dust most effectively outside the data-medium surface, when how to roll a spiral becomes reverse bordering on a core of roller shaft orientations, and a spiral slot is formed and a roller is seen at the front from conveyance, left-hand side is good to form a spiral slot so that the lower left may become ** and, as for a core to right-hand side, the lower right may become ** from a core of roller shaft orientations.

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[0026] In addition, this invention is not limited to the conveyance device of forms, such as a manuscript and the recording paper, but is applied also to the conveyance device of other plane data medium.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the perspective diagram showing the gestalt of operation of the conveyance device of this invention.

[Drawing 2] It is drawing showing actuation of the driving roller in drawing 1 , and (a) and (b) are the perspective diagrams which expanded the left end portion of a driving roller seen from the conveyance direction of a manuscript.

[Drawing 3] It is drawing showing a continuation of drawing 2 in actuation of the driving roller in drawing 1 , and (a) and (b) are the perspective diagrams which expanded the left end portion of a driving roller seen from the conveyance direction of a manuscript.

[Description of Notations]

1 Manuscript

2 Driving Roller

3 Follower Roller

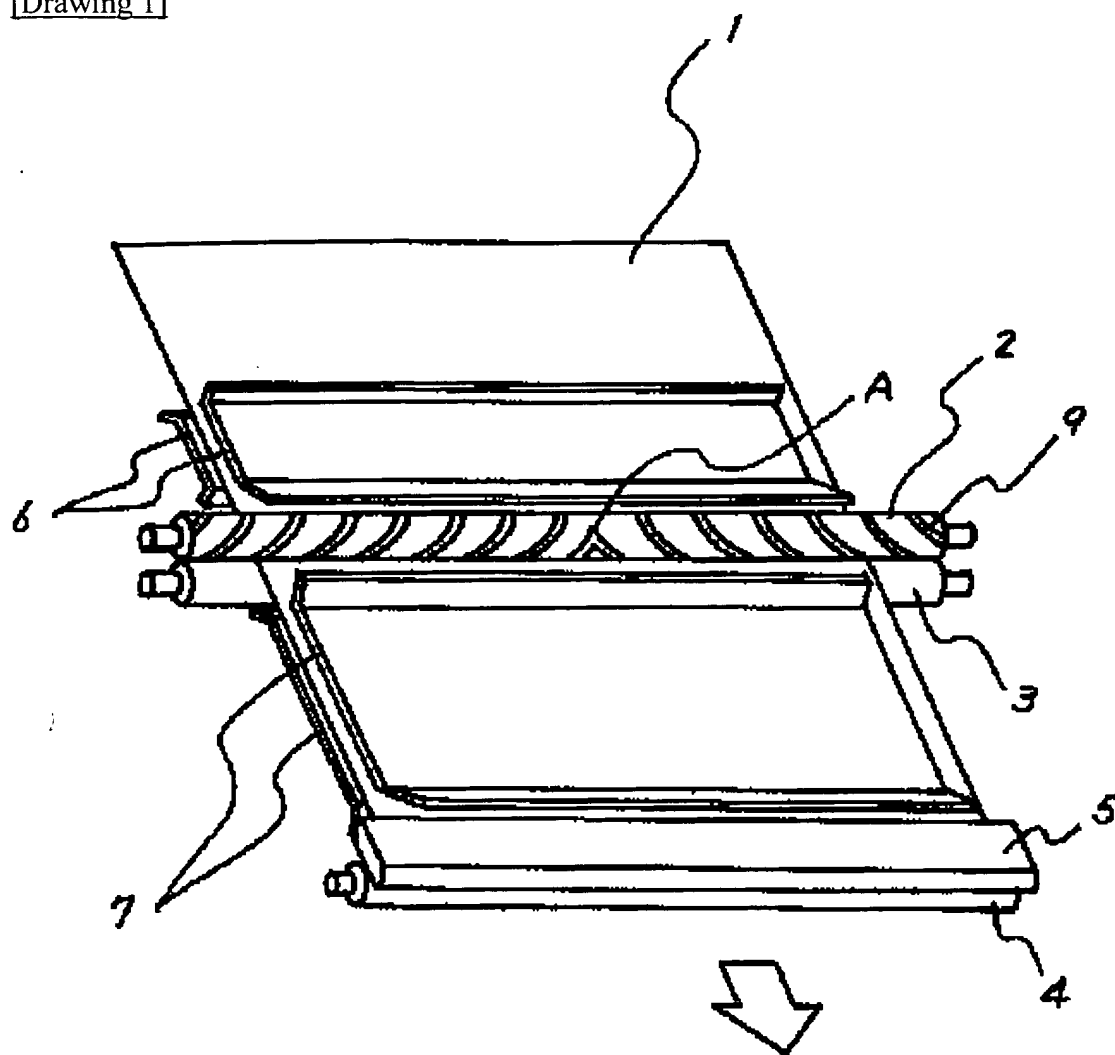
4 Platen Roller

5 Reading Device

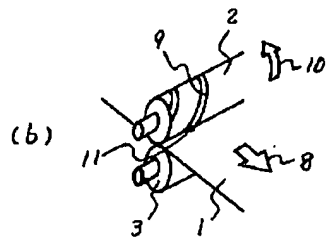
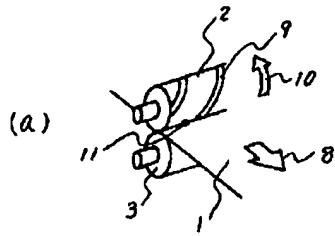
6 Conveyance Guide

7 Conveyance Guide

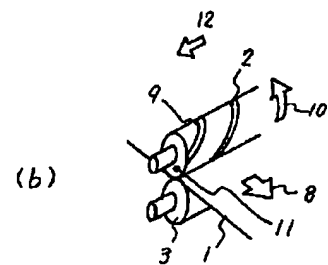
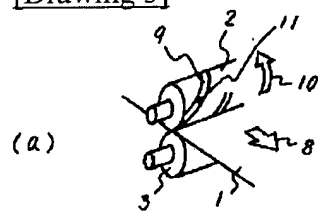
[Drawing 1]



[Drawing 2]



[Drawing 3]



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